

A Prologue to Nostalgia: Savoring Creates Nostalgic Memories that Foster Optimism

Marios Biskas  
University of Southampton

Wing-Yee Cheung  
University of Winchester

Jacob Juhl, Constantine Sedikides, and Tim Wildschut  
University of Southampton

Erica G. Hepper  
University of Surrey

Word Count: (7197)

Corresponding author:

Marios Biskas; Center for Research on Self and Identity, Psychology Department, University of Southampton, Southampton SO17 1BJ, UK; mb7g14@soton.ac.uk

Wing-Yee Cheung; Department of Psychology, University of Winchester, Winchester, SO22 4NR, United Kingdom; +4401962826452; WingYee.Cheung@winchester.ac.uk; orcid.org/0000-0003-2395-1872

Jacob Juhl; Center for Research on Self and Identity, Psychology Department, University of Southampton, Southampton SO17 1BJ, UK; +4402380591949; J.T.Juhl@soton.ac.uk; orcid.org/0000-0003-4833-8062

Constantine Sedikides; Center for Research on Self and Identity, Psychology Department, University of Southampton, Southampton SO17 1BJ, UK; +4402380594733; orchid.org/0000-0003-3681-4332

Tim Wildschut; Center for Research on Self and Identity, Psychology Department, University of Southampton, Southampton SO17 1BJ, UK; +4402380592639; R.T.Wildschut@soton.ac.uk

Erica Hepper; School of Psychology, AD Building, University of Surrey, Guildford GU2 7XH; +4401483686864; e.hepper@surrey.ac.uk; orcid.org/0000-0003-4587-5866

*This is an Accepted Manuscript of an article published by Taylor & Francis in COGNITION AND EMOTION on 2 April 2018, available online:*

<https://www.tandfonline.com/doi/full/10.1080/02699931.2018.1458705>

## Abstract

How are nostalgic memories created? We considered savoring as one process involved in the genesis of nostalgia. Whereas nostalgia refers to an emotional reflection upon *past* experiences, savoring is a process in which individuals deeply attend to and consciously capture a *present* experience for subsequent reflection. Thus, having savored an experience may increase the likelihood that it will later be reflected upon nostalgically. Additionally, to examine how cognitive and emotional processes are linked across time, we tested whether nostalgia for a previously savored experience predicts optimism for the future. Retrospective reports of having savored a positive event were associated with greater nostalgia for the event (Study 1). Retrospective reports of savoring a time period (college) were associated with greater nostalgia for that time period when participants were in a setting (alumni reunion event) that prompted thoughts of the time period (Study 2). Savoring an experience predicted nostalgia for the experience 4-9 months later (Study 3). Additionally, nostalgia was associated with greater optimism (Studies 2-3). Thus, savoring provides a foundation for nostalgic memories and an ensuing optimism.

*Keywords:* nostalgia, savoring, optimism, memory

### A Prologue to Nostalgia: Savoring Creates Nostalgic Memories that Foster Optimism

Over the past decade, researchers have sought to understand what nostalgia is and what it does. This work has revealed that nostalgia is a bittersweet, albeit predominantly positive, emotion that entails psychological benefits (Sedikides et al., 2015). In particular, nostalgia, despite inherently being about the past, helps individuals manage psychological adversity in the present. It also positively influences how they perceive their future; for example, nostalgia fosters an optimistic outlook of the future (Cheung et al., 2013). Although this work has clarified what nostalgia is and its psychological benefits, research has not yet addressed the psychological processes implicated in the formation of nostalgic memories. Put otherwise, how are life experiences transformed into nostalgic memories? To answer this question, we focused on a psychological process that occurs during a life experience that may contribute to the transformation of the experience into a nostalgic memory. Specifically, we examined whether savoring, defined as consciously capturing and retaining an on-going experience (Bryant, 2003), is implicated in the creation of nostalgic memories. Additionally, because nostalgia increases optimism, we aimed to examine how cognitive and emotional processes are linked over time. Thus, we tested whether individuals' present nostalgia for previously savored experiences is associated with greater optimism for the future.

### **What Nostalgia Is**

Historically, scholars conceptualized nostalgia as a medical or psychological disorder (see Batcho, 2013; Sedikides, Wildschut, & Baden, 2004). However, recent findings paint a different picture. The New Oxford Dictionary of English (1998) defines nostalgia as 'a sentimental longing or wistful affection for the past' (p. 1266). Consistent with this definition, prototype analyses examining lay persons' conceptualizations of nostalgia have shown that people conceive nostalgia to be a past-oriented, social, self-relevant, and mostly positive emotion (Hepper, Ritchie, Sedikides, & Wildschut, 2012; Sedikides & Wildschut,

2016a; Van Tilburg, Wildschut, & Sedikides, 2017). This conceptualization of nostalgia is similar across 18 countries and five continents (Hepper et al., 2014). Analyses of nostalgic narratives (Wildschut, Sedikides, Arndt, & Routledge, 2006) have additionally demonstrated that nostalgic recollections typically consist of personally meaningful life events (e.g., graduation ceremony, birth of a child, wedding) that focus on the self within a social context (e.g., family, friends, romantic partners). These analyses have also indicated that nostalgia is primarily a positive emotion. Yet, nostalgia frequently involves a hint of negativity, as people may miss or long for experiences or time periods from their past. Finally, nostalgia is a frequent occurrence, with 79% of individuals reporting that they feel nostalgic one to four times a week (Wildschut et al., 2006). In all, nostalgia is a common and ambivalent, although primarily positive, sentimental reflection on one's past, encompassing meaningful and social experiences.

### **What Nostalgia Does**

While research has helped understand what nostalgia is, the bulk of contemporary research on nostalgia has investigated the psychological impact that nostalgia has on individuals. This work can largely be summarized in the regulatory model of nostalgia (Sedikides et al., 2015). According to this model, nostalgia manages psychologically aversive states and, in turn, confers psychological benefits (Sedikides et al., 2015). Research supporting the model has shown, for example, that when people are in a negative mood, lonely, bored, or lack meaning in life, they become more nostalgic. Nostalgia, in turn, improves mood, increases a sense of social connectedness, reduces boredom, and bolsters meaning in life (Routledge et al., 2011; Van Tilburg, Igou, & Sedikides, 2013; Wildschut et al., 2006; Zhou, Sedikides, Wildschut, & Gao, 2008).

Additionally, although nostalgia is about the past, it influences perceptions of the future. For example, it increases approach motivation (Stephan et al., 2014), goal pursuit

(Sedikides et al., 2017), inspiration (Stephan et al., 2015), and creativity (Van Tilburg, Sedikides, & Wildschut, 2015; for a review, see: Sedikides & Wildschut, 2016b). Most relevant to the present research, nostalgia makes people more optimistic about their future. Specifically, Cheung et al. (2013) assigned participants to recall either a nostalgic or an ordinary autobiographical event, and then assessed optimism. Participants in the nostalgia (vs. ordinary) condition evinced greater optimism.

### **The Present Research**

#### **The Formation of Nostalgic Memories through Savoring**

Whereas previous research has illustrated what nostalgia is and what nostalgia does, we aimed to examine the psychological or cognitive processes involved in the formation of nostalgic memories. We focus in particular on savoring. Savoring entails deep attention to a present experience in order to capture it, retain it, and fully appreciate it (Bryant & Veroff, 2007). Research on savoring has investigated whether savoring is beneficial for well-being (Bryant, 2003; Bryant & Veroff, 2007). Indeed, this work has shown that savoring is positively associated with traits indicative of psychological health, such as positive affectivity and optimism, and is negatively associated with traits indicative of poor psychological health, such as hopelessness and neuroticism.

In contrast to nostalgia, which concerns an experience that occurred in the *past*, savoring is a process that occurs while an experience is *presently* ongoing. In the words of Bryant and Veroff (2007), savoring is a “process for the here and now” (p. 8). These authors also acknowledged, however, that people savor experiences with an eye towards being able to remember them in the future. In particular, they viewed savoring as the “process of active memory building” (p. 35). Citing a personal example, they wrote (p. 34):

I have a strong sense of the fleetingness of the moment, and I make special efforts to capture it. I want to remember this moment for the rest of my life, so I build the memory of it actively and deliberately.

Hence, savoring is consciously capturing a current experience so it can later be reflected upon fondly. We thus propose that savoring an experience makes it more likely that the experience will subsequently become a nostalgic memory.

Consistent with this proposal, research has shown that people savor life experiences as a means to enhance the emotionality of those experiences (Bryant, 2003; Bryant & Veroff, 2007), and that the presence of strong emotions can strengthen the encoding of events into memory (LaBar & Cabeza, 2006). Moreover, deep information processing, as one does when savoring, helps solidify memories ( Craik, 2002), particularly when the experience is important to one's self-concept (Sedikides, Green, Saunders, Skowronski, & Zengel, 2016).

### **Downstream Relation with Optimism**

We additionally conjectured whether nostalgia, as a product of savoring, is in turn associated with greater optimism. As mentioned, nostalgia increases optimism (Cheung et al., 2013). We aimed to expand upon this finding by testing whether individuals' *current* nostalgic sentiments for an experience that they had *previously* savored predicts greater optimism for the *future*. In so doing, we examined how cognitive and emotional processes are related over time. More specifically, we tested how a cognitive process occurring in individuals' past (i.e., having savored an experience) is linked with emotion in the present (i.e., nostalgia) and, in turn, with perceptions of the future (i.e., optimism).

We had an ancillary reason for investigating optimism. Prior work has indicated that individuals who tend to savor their experiences are more optimistic (Bryant, 2003). However, no research has examined why savoring is linked to greater optimism. Our research gives rise to the possibility that nostalgia helps explain this relationship. If, as we propose, savoring

nurtures nostalgic memories and, as previous work has illustrated, nostalgia increases optimism (Cheung et al., 2013), then nostalgia may at least partially account for the link between savoring and optimism.

### **Overview**

To ascertain if savoring life experiences contributes to the creation of nostalgic memories, we conducted three studies testing the association between savoring an experience and subsequent nostalgia for that experience. In Study 1, we examined whether savoring a specific positive event (reported retrospectively) is associated with greater nostalgia for the event. In Study 2, we examined the relation between retrospective reports of savoring a time period in one's life (i.e., attending college) and nostalgia for that period when in a context that naturally prompts thoughts about the time period (i.e., alumni reunion). In Study 3, we used a longitudinal design to test the association between savoring an experience and subsequent nostalgia for that experience. In particular, we assessed savoring for a time period (attending college) which was currently ongoing, albeit about to end. At a later point, we assessed nostalgia for that time period. Finally, to find out if individuals' present nostalgic sentiments for past savored experiences predicts greater optimism, we assessed optimism in Studies 2-3. In all studies, we recruited as many participants as possible during the designated study period. We did so under the *a priori* stipulation that  $N \geq 84$ , which yields power  $\geq .80$  to detect a medium effect size  $r = .30$  (two-tailed  $\alpha = .05$ ). The designated study periods for Studies 1-3 were, respectively, one week, one day (university reunion), and one day (graduation day).

### **Study 1**

In Study 1, we addressed whether having savored an event is associated with heightened nostalgia for the event upon recalling it. We instructed participants to recall a positive event from their life. Next, we asked them to indicate how much they had savored

the recalled event and how nostalgic they currently felt about it. We hypothesized that having savored the positive event would be associated with greater nostalgia for it.

## Method

**Participants.** Two hundred and sixty-six volunteers (200 women, 54 men, 12 unknown) aged between 15 and 64 years ( $M = 26.02$ ,  $SD = 10.71$ ) took part in an online study (11 volunteers did not provide information about their age).<sup>1</sup> We advertised the study on three websites: John Krantz's "Psychological Research on the Net" ( $n = 117$ ), Social Psychology Network ( $n = 121$ ), and Online Psychology Research UK ( $n = 11$ ); 17 volunteers did not report the website on which they found the study's advertisement.

**Procedure and materials.** We first instructed participants to write about a positive event from their past: "Bring to mind a positive event in your adulthood. Specifically, try to think of a past event that is positive. Bring this positive experience to mind. Immerse yourself in the positive experience and think about how it makes you feel." Next, we asked participants to "write down four keywords relevant to this positive event" and then spend a minimum of 5 minutes writing about the experience. We specified that they should recall only events from their adulthood in order to reduce the variance in the time that had passed since the event.

Next, we assessed how much participants had savored the event at the time it occurred. We administered an adapted version of the Savoring Beliefs Inventory (SBI; Bryant, 2003). To ensure that participants responded with respect to how they felt at the time the event occurred, we prefaced each statement with "When the event occurred, I felt that...", and we worded each item using the past tense. The statements were: "I felt fully able to appreciate the good things about the event," "I could prolong enjoyment of the event by my own effort," "I knew how to make the most of the good parts of the event," "I found it easy to enjoy myself when I wanted to," "I was my own worst enemy in enjoying the event," "I



couldn't seem to capture the joy of the happy moments," "I didn't enjoy the event as much as I should have," and "I found it hard to hang onto a good feeling." For each statement, participants indicated the extent to which they agreed (1 = *strongly disagree*, 6 = *strongly agree*). We reverse-scored the last four statements and then averaged responses across all items to compute savoring scores ( $\alpha = .84$ ,  $M = 4.96$ ,  $SD = .97$ ).

Finally, we measured how nostalgic participants were for the event. We first instructed them to bring to mind the event they initially described. Then, we presented them with the definition of nostalgia (i.e., "sentimental longing or wistful affection for the past") and asked them to indicate the extent to which they agreed (1 = *strongly disagree*, 6 = *strongly agree*) with three items: "Thinking about the event I described leaves me feeling nostalgic," "I feel nostalgic when I think about the event I described," and "The event I described is a nostalgic experience for me." The items were worded in present tense to ensure that participants responded based on how they presently feel. We averaged responses to compute nostalgia scores ( $\alpha = .97$ ,  $M = 3.99$ ,  $SD = 1.72$ ).

## Results and Discussion

Savoring was significantly and positively related to nostalgia,  $r(264) = .18$ ,  $p = .003$ . The more individuals had savored an event, the more nostalgic they feel about it. This provided evidence that savoring an event conduces to nostalgia for it.

## Study 2

In Study 2, we attempted to replicate and extend the finding of Study 1 with three goals in mind. First, prior work has established that information about autobiographical memories is arranged hierarchically (Conway & Pleydell-Pearce, 2000). At the broadest level, people store information about general life periods (e.g., high school, college). At a more specific level, they store information about general events (e.g., first time riding an airplane). Memory construction and retrieval can differ across these levels of specificity. For

example, people access information from life periods quicker than information for particular events. However, they prefer to access their memories at the level of events (Conway & Pleydell-Pearce, 2000). In Study 1, we measured savoring and nostalgia pertaining to a specific past event. In Study 2, we examined the generality of the link between savoring and nostalgia by focusing on a general life period.

Second, to bolster the ecological validity of our finding, we assessed nostalgia in a naturalistic setting. Specifically, we approached college alumni during an alumni reunion event and asked them to indicate how much they had savored their time spent in college and how nostalgic they currently felt for that period in their life. We hypothesized that having savored one's time in college would be associated with greater nostalgia for it.

Third, we tested whether nostalgia for past savored experiences is associated with greater optimism, and whether nostalgia helps explain the association between savoring and optimism. Thus, during the reunion event, we asked participants to indicate how optimistic they felt about their future. We hypothesized that having savored the college experience would predict greater optimism and that nostalgia would mediate the relation between savoring and optimism.

## **Method**

**Participants.** One hundred and twenty-two alumni of the University of Southampton (48 women, 74 men), varying in age between 32 and 79 years ( $M = 59.07$ ,  $SD = 10.08$ ) completed the study during an alumni reunion event at the University. All participants had graduated between 1955 and 2012.

**Procedure and Materials.** We approached alumni at a reunion and requested their voluntary participation. We first administered an adapted version of the SBI (Bryant, 2003) to assess how much they had savored their time in college. Specifically, we asked them to indicate the extent to which they agreed (1 = *strongly disagree*, 6 = *strongly agree*) with four

statements preceded by the stem “During my time at university...”: “I felt fully able to appreciate good things that happened to me,” “I could make my enjoyment of good moments last longer by thinking or doing certain things,” “I could not seem to capture the joy of happy moments,” and “It was hard for me to hang onto a good feeling for very long.” We shortened the scale to four items so that we could quickly administer it when approaching alumni at the busy reunion. We reverse-scored the last two items and averaged responses across all items to compute savoring scores ( $\alpha = .53$ ,  $M = 4.34$ ,  $SD = 0.71$ ).

Next, we assessed participants’ current levels of nostalgia for college. After presenting participants with the definition of nostalgia, we asked them to “Think about your experience of coming back to the University today, and how it is making you feel,” and indicate the extent to which they agreed (1 = *strongly disagree*, 6 = *strongly agree*) with two statements preceded by the stem “Right now...”: “...I am feeling nostalgic about my time at the University of Southampton” and “...I am having nostalgic feelings about my time at the University of Southampton.” These items were highly correlated,  $r(115) = .92$ , and we averaged them to compute nostalgia scores ( $M = 4.04$ ,  $SD = 1.28$ ).<sup>2</sup>

Finally, we assessed the extent to which thinking about college made participants feel optimistic (Cheung et al., 2013). We asked them to indicate the extent to which they agreed (1 = *strongly disagree*, 6 = *strongly agree*) with two statements preceded by the stem “Thinking about my time at the University, I feel....”: “optimistic about my future” and “hopeful about my future.” These items were highly correlated,  $r(117) = .89$ , and we averaged them to compute optimism scores ( $M = 3.95$ ,  $SD = 1.14$ ).<sup>3</sup>

## Results

**Zero-order correlations.** First, we examined the relations among savoring, nostalgia, and optimism. Savoring was significantly and positively related to nostalgia,  $r(120) = .26$ ,  $p = .004$ . Similarly, savoring was significantly and positively related to optimism,  $r(120) = .25$ ,  $p =$

= .006. Finally, nostalgia and optimism were significantly and positively related to each other,  $r(120) = .26, p = .004$ .

**Mediation analysis.** We subsequently tested the indirect effect of savoring on optimism via nostalgia by conducting a bootstrapped mediational analysis (10,000 resamples) using PROCESS (Model 4; Hayes, 2013). The indirect effect (denoted as  $ab$ ) was significant,  $ab = 0.0866, SE = 0.0543, 95\% CI = [0.0113, 0.2294]$  (Figure 1).<sup>4</sup>

**Alternative models.** In addition to the original model (savoring  $\Rightarrow$  nostalgia  $\Rightarrow$  optimism), there are five potential alternative models that could explain the relations among savoring, nostalgia, and optimism (Table 1). To compare models, we computed the Akaike Information Criterion (AIC; Akaike, 1974) and the Expected Cross-Validation Index (ECVI; Browne & Cudeck, 1993) for each model (lower values indicate better models). Models that have the same paths between the same variables will produce identical AIC and ECVI values, even when some paths are in a different direction. We therefore trimmed the ‘direct effect’ path between the independent and dependent variable. Additionally, models that are mirror images of each other will produce the same AIC and ECVI values, because they have the same paths between the same variables. As can be seen in Table 1, the original model (and its mirror image) had lower AIC and ECVI values than any of the alternatives. Thus, we retained the original (and its mirror image) over the alternative models.

We retained the original model and rejected its mirror image on conceptual grounds. First, participants’ savoring of college took place prior to their nostalgic sentiments for college. The savoring items directed participants to respond with respect to how they felt “During my time at university,” and the nostalgia items directed them to respond with respect to how they felt at the time of the alumni event. Additionally, prior work has demonstrated a causal effect of nostalgia on optimism (Cheung et al., 2013), but it has not demonstrated the reverse. Finally, nostalgia is generally triggered by negative psychological states, not by

positive states such as optimism (for reviews, see Sedikides et al., 2015; Wildschut, Sedikides, & Cordaro, 2011).

## **Discussion**

Study 2 conceptually replicated the findings of Study 1, showing that retrospective reports of having savored an experience are associated with nostalgia for it. Study 2 also extended upon Study 1 in several ways. First, in Study 2, we found that savoring a general time period (instead of a specific event) is associated with subsequent nostalgia for that time period. Our findings thus generalize across different levels of hierarchically organized autobiographical memories. Second, we assessed nostalgia in a naturalistic setting and found that having savored college life was associated with greater nostalgia for college during an alumni reunion event. This demonstrated ecological validity of our findings. Third, we assessed how optimistic participants felt about the future. Consistent with Cheung et al. (2013), nostalgia for a savored experience predicted greater optimism. Additionally, consistent with Bryant (2003), savoring was associated with greater optimism. Importantly, nostalgia mediated the relation between savoring and optimism, suggesting that nostalgia is one reason why savoring and optimism are related.

## **Study 3**

Studies 1-2 provided evidence that savoring contributes to the formation of nostalgic memories. These studies, however, relied on retrospective reports of savoring that were assessed at the same time as nostalgia. To address this limitation in Study 3, we used a longitudinal design in which we assessed (1) savoring of a specific experience while the experience was ongoing, yet about to end, and (2) nostalgia for that experience 4-9 months later. Specifically, we approached college students during their graduation ceremony day (Time 1) and asked them how much they have been savoring their final year at college. Then, 4-9 months later (Time 2), we asked them how nostalgic they felt for college. We

hypothesized that savoring college would predict greater nostalgia for it. At Time 2, we also assessed how optimistic participants felt about their future. We hypothesized that nostalgia for college would predict greater optimism. Moreover, we hypothesized that savoring would predict greater optimism, and that nostalgia would mediate the relation between savoring and optimism.

## Method

**Participants.** We collected data at two time points. Time 1 (T1) was on the day of the graduation ceremony, and Time 2 (T2) was 4-9 months later. One hundred and sixty-eight undergraduate and graduate students from the University of Southampton (115 women, 52 men, 1 unknown) aged between 20 and 55 years ( $M = 22.35$ ,  $SD = 4.00$ ) participated at T1. Sixty-six students from the original sample (39.3% response rate; 51 women, 14 men, 1 unknown) aged between 20 and 55 years ( $M = 22.18$ ,  $SD = 4.41$ ) participated at T2. All subsequent statistics and analyses are from participants who completed both parts of the study. Although we exceeded the stipulated minimum sample size of 84 at T1, the lower than expected response rate at T2 meant that we achieved power = .70 to detect a medium effect size  $r = .30$  (two-tailed  $\alpha = .05$ ).

**Procedure and Materials.** At T1, we approached graduating students on the University of Southampton campus the day of the graduation ceremony and requested their participation. We first assessed how much they have been savoring experiences from their final year of college with one item adopted from Bryant, Smart, and King (2005, Study 1). We only used one item due to time constraints. Specifically, participants indicated the extent to which they agreed (1 = *strongly disagree*, 6 = *strongly agree*) with “In your final year, did you consciously try to save the memories in your mind for later?” ( $M = 3.15$ ,  $SD = 1.34$ ).

At T2, we emailed participants and asked them to complete the second part of the study. We first assessed nostalgia for college. We presented participants with the definition of

nostalgia and instructed them to indicate the extent to which they agreed (1 = *strongly disagree*, 6 = *strongly agree*) with three statements: “Thinking about my university life leaves me feeling nostalgic,” “I feel nostalgic when I think about my university life,” and “My university life is a nostalgic experience for me.” We averaged responses to compute nostalgia scores ( $\alpha = .96$ ,  $M = 4.35$ ,  $SD = 1.33$ ).

We also assessed the extent to which participants experienced optimism at T2. In particular, we asked them to indicate the extent to which they agreed (1 = *strongly disagree*, 6 = *strongly agree*) with two statements preceded by the stem “Thinking about my University life makes me feel...”: “optimistic about my future,” “ready to take on new challenges” (Cheung et al., 2013). These items were highly correlated,  $r(64) = .81$ , and we averaged them to compute optimism scores ( $M = 4.42$ ,  $SD = 1.15$ ).

## Results

**Zero-order correlations.** We first examined the relations among T1 savoring, T2 nostalgia, and T2 optimism. T1 savoring was significantly and positively related to T2 nostalgia,  $r(64) = .28$ ,  $p = .024$ , but was not significantly related to T2 optimism,  $r(64) = .20$ ,  $p = .116$ . T2 nostalgia and T2 optimism were significantly and positively related to each other,  $r(64) = .38$ ,  $p = .001$ .

**Mediation analysis.** Next, we tested the indirect effect of T1 savoring on T2 optimism via T2 nostalgia by conducting a bootstrapped mediational analysis (10,000 resamples) using PROCESS (Model 4; Hayes, 2013). The indirect effect was significant,  $ab = 0.09$ ,  $SE = 0.06$ , 95% CI = [0.009 / 0.235] (Figure 2).

**Alternative models.** As in Study 2, we compared our original model against all possible alternatives using AIC and ECVI (Table 2). The original model (and its mirror image) again had lowest values for both AIC and ECVI. Thus, we retained the original (and

its mirror image) over the alternative models. We also retained the original model and rejected its mirror image on theoretical grounds (see Study 2).

## Discussion

Study 3 extended the findings of Studies 1-2, demonstrating that savoring a particular experience longitudinally predicts greater subsequent nostalgia for the experience. Specifically, savoring the last year of college was associated with higher nostalgia for college 4-9 months later. Additionally, nostalgia for college was associated with greater optimism. The hypothesized relation between savoring and optimism was not significant in this study. However, the size of this relation ( $r = .20$ ) was comparable to that of the relation in Study 2 ( $r = .25$ ), and we suspect that the lack of significance was due to the limited number of participants who participated at Time 2. Indeed, we meta-analyzed the correlation across the two studies and obtained a significant relation between savoring and optimism ( $M_r = .23, p = .002$ ; two-tailed).<sup>5</sup> Finally, in Study 3, we found an indirect relation between savoring and optimism via nostalgia.

## General Discussion

The literature has extensively addressed what nostalgia is and what nostalgia does. We complemented those foci by investigating how nostalgic memories are formed. We theorized that savoring an experience leads individuals to subsequently be nostalgic about it, and we tested this general idea in three studies. In Study 1, savoring a specific event was related to greater nostalgia for it. In Study 2, savoring a general time period was associated with greater nostalgia for it. Finally, in Study 3, savoring a time period predicted greater nostalgia for it 4-9 months later. These convergent findings provide evidence that savoring contributes to the formation of nostalgic memories.

Our findings also illustrate that, although nostalgia refers to the past, it orients individuals toward the future. Studies 2 and 3 showed that nostalgia for savored experiences



was associated with optimism for the future. In doing so, the present research illustrates that nostalgia bridges past experiences with perceptions of the future.

In addition, the findings document the link between savoring and optimism (Bryant, 2003) and make strides towards explaining it. Specifically, savoring one's experience at college was linked with higher optimism, and this relation was mediated by nostalgia. This suggests that savoring and optimism are associated, in part, because savoring provides the foundation for nostalgic memories, which in turn facilitate a brighter perspective of the future.

### **Further Explication of the Formation of Nostalgic Memories**

Savoring has been conceptualized as a memory building process (Bryant & Veroff, 2007). As such, savoring an experience should secure it in memory, allowing greater opportunity for subsequent nostalgic reflection on it. Consistent with this, people savor experiences to enhance their current emotions (Bryant, 2003; Bryant & Veroff, 2007), and heightened emotionality during an experience strengthens memory for it (LaBar & Cabeza, 2006). Moreover, savoring entails deep processing of information, which fortifies memories ( Craik, 2002). However, to our knowledge, no work has examined whether savoring an experience actually strengthens memory for it. Future work should directly examine whether savoring an experience strengthens memory for it and if this accounts for the link between savoring and nostalgia.

Additional items on the research agenda pertain to testing whether other processes, independent of savoring, are involved in the formation of nostalgic memories. For example, does the amount of elapsed time (or perception of time) since an experience occurred influence nostalgic sentiments for the experience? That is, are chronologically older memories more likely to elicit nostalgia? Also, do triggers of specific memories (e.g., scent,

music, pictures) influence whether an experience is remembered nostalgically? Finally, are frequently recalled or discussed memories more likely to prompt nostalgia?

### **Cognition and Emotion across Time**

Our research is illustrative of, and builds upon, contemporary views of the complex interdependence between cognition and emotion (Oatley, Parrott, Smith, & Watts, 2011; Pessoa, 2015). Savoring, in and of itself, showcases the effect that cognition has on emotion. In particular, savoring involves cognitive processes (e.g., deep attention) aimed at heightening the intensity of one's present emotions (Bryant, 2003; Bryant & Veroff, 2007). Our studies, however, extended beyond this, illustrating how cognition and emotion are linked across time. Having deeply and consciously attended to (i.e., having savored) an experience was associated with subsequent emotionality (i.e., nostalgia). This was particularly evident in Study 3, in which we assessed savoring and nostalgia at separate time points. Further, we extended the timeline toward the future, demonstrating that nostalgic sentiments (for savored experiences) are associated with positive cognitions and emotions concerning the future (i.e., optimism).

### **Emotion-Regulation and Well-Being**

The interplay between savoring and nostalgia may also aid emotion regulation and, as such, improve well-being. Our findings suggest that savoring can be construed as a unique emotion-regulation strategy. Like many other emotion-regulation strategies, savoring is aimed at altering (intensifying) emotions in the present (Bryant, 2003; Bryant & Veroff, 2007). However, given that savoring appears to be implicated in the creation of nostalgic memories, it can also be construed as a longer term (perhaps pre-emptive) emotion-regulation strategy. As we noted, people use nostalgia to manage negative psychological states (Sedikides et al., 2015). Having savored previous life experiences is likely to supply more nostalgic memories upon which people can reflect when facing psychological adversity.

Thus, the more one has savored life experiences, the better able one will be to use nostalgia for regulating negative states.

This interplay between savoring and nostalgia may be one reason why people high in trait savoring evince better well-being (Bryant, 2003). The mediating role of nostalgia in the relation between savoring and optimism begins to illustrate this. Future research employing longitudinal and daily diary methods should examine how the interplay between savoring and nostalgia facilitates emotion regulation and well-being. Such research could, for example, determine whether individuals who have savored several life experiences more readily recruit nostalgic memories to regulate negative states.

### **Practical Implications**

Our findings additionally have practical utility that warrants further empirical inquiry. The idea that savoring and nostalgia work together across time to regulate emotions and enhance well-being has potential therapeutic value. There has been enduring interest in interventions that can improve well-being (Lyubomirsky & Layous, 2013). Research has shown, for example, that routinely counting one's blessings and performing acts of kindness (Lyubomirsky, Sheldon, & Schkade, 2005) confer psychological health benefits. Along similar lines, there have been efforts to examine whether savoring interventions benefit psychological well-being (for a review, see Smith, Harrison, Kurtz, & Bryant, 2014). While this work shows promise of savoring's therapeutic effects, these interventions have all taken place within the span of a few weeks or less, and thus, are not well-positioned to test the long-term benefits of savoring. In particular, this work is not positioned to test whether savoring stores life experiences in memory for people to subsequently reflect upon nostalgically when they are facing adversity.

Long-term interventions are thus warranted to scrutinize the therapeutic utility of the interplay between savoring and nostalgia. An example of such an intervention would involve

teaching first-year college students how to savor, and reminding them to savor their college experience through the entirety of their undergraduate degree. In follow-up assessments, researchers could examine memory and nostalgia for college, as well as the use of nostalgia in response to negative life events. Large-scale interventions like this could set the stage for the use of savoring and nostalgia in clinical settings.

Our findings are also relevant to non-profit organizations in search of donations. Universities, for example, constantly solicit donations from alumni. Prior research suggests that, if alumni are nostalgic for their time in college, they may be more likely to donate money to their alma mater. Specifically, nostalgia increases the willingness to part with one's money (Lasaleta, Sedikides, & Vohs, 2014) and the willingness to make monetary donations to charities (Zhou et al., 2012). Moreover, marketing research has shown that imbuing advertisements with nostalgia improves their effectiveness (Schindler & Holbrook, 2003). In all, making alumni nostalgic for their time at university may boost donations, and, as the current research attests, encouraging students to savor their time at university may facilitate this goal.

### **Limitations**

**Positive affect.** It is possible that our findings can be accounted for by positive affect. That is, high levels of trait positive affect could lead to more savoring, higher nostalgic engagement, and increased optimism. However, a closer inspection of the literature renders this possibility unlikely. As we discussed earlier, nostalgia is triggered by negative affect, not by positive affect (Wildschut et al., 2006; see Sedikides et al., 2015). Additionally, positive affect does not play a role in the link between nostalgia and optimism (Cheung et al., 2013). Thus, it is unlikely that positive affect underlies the present findings.

**Savoring and optimism.** An ancillary objective of our studies was to explain the relation between savoring and optimism (Bryant, 2003). We advanced this objective by

demonstrating the mediating role of nostalgia, but we did not fully explain this relation. The size of the indirect effect was not large, suggesting that there are additional mechanisms linking savoring and optimism. Self-efficacy may qualify as such a mechanism. Savoring can be construed as an *ability* to capture the present moment. Having greater ability may increase perceived self-efficacy, which may in turn provide a good reason for being optimistic.

**Same focal experience.** Another potential limitation is that in all three studies participants responded to both the savoring and nostalgia scales in reference to the same focal experience. This, perhaps, confounds the two variables. If our research objective was to test whether savoring and nostalgia are related at the trait level, then rooting nostalgia and savoring scores in the same experience would have been an issue. We were interested, however, in how a particular life experience subsequently becomes a nostalgic memory, and so we proposed that savoring a life experience is a contributing factor. Hence, we assessed the link between how much participants had savored a particular experience and how much they subsequently felt nostalgic for that same experience. Thus, the method we used is optimal for our research purposes.

**Gender.** Women were overrepresented in our studies, specifically in Study 1 (77% women) and Study 3 (74% women). Although this is a limitation, we do not think it poses a threat to our main conclusions. The results of Study 3 (which included only 14 men) were consistent with those of Study 1 (54 men) and Study 2 (74 men). Also, there were no gender differences on savoring, nostalgia, or optimism in any of the studies (all  $ps > .05$ ). Finally, we re-ran all analyses controlling for gender, and all effects remained significant. Nevertheless, future research ought to attain a more representative sample of women and men.

Prior work has shown that women manifest a greater tendency to savor their life experiences (Bryant, 2003). We suspect that the inconsistency between prior work and our research is due to our assessment of specific experiences rather than the general tendency to

savor. Additionally, in Studies 2-3, we further confined the savoring measures to the life experience of college attendance.

### **Conclusion**

The present work evidences that savoring is a psychological process that helps turn life experiences into nostalgic memories. It also showed that nostalgia for savored life experiences is associated with an optimistic outlook of the future. In doing so, it helps explain why savoring and optimism are related. These findings set the stage for additional forays into the origins of nostalgic memories, the temporal interplay between cognition and emotion, as well as the role of savoring and nostalgia in emotion regulation and well-being.

## References

- Akaike, H. (1974). A new look at the statistical model identification. *Automatic Control, IEEE Transactions on*, 19, 716-723. doi:10.1109/TAC.1974.1100705
- Batcho, K. I. (2013). Nostalgia: The bittersweet history of a psychological concept. *History of Psychology*, 16, 165-176. doi:10.1037/a0032427
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. *Sage focus editions*, 154, 136-136. doi:10.1177/0049124192021002005
- Bryant, F. B. (2003). Savoring Beliefs Inventory (SBI): A scale for measuring beliefs about savoring. *Journal of Mental Health*, 12, 175-196. doi:10.1080/0963823031000103489
- Bryant, F. B., Smart, C. M., & King, S. P. (2005). Using the past to enhance the present: Boosting happiness through positive reminiscence. *Journal of Happiness Studies*, 6, 227-260. doi:10.1007/s10902-005-3889-4
- Bryant, F. B., & Veroff, J. (2007). *Savoring: A new model of positive experience*. Mahwah, NJ: Erlbaum.
- Cheung, W. Y., Wildschut, T., Sedikides, C., Hepper, E. G., Arndt, J., & Vingerhoets, A. J. (2013). Back to the future: Nostalgia increases optimism. *Personality and Social Psychology Bulletin*, 39, 1484-1496. doi:10.1177/0146167213499187
- Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, 107, 261. doi:10.1037/0033-295X.107.2.261
- Craik, F. I. (2002). Levels of processing: Past, present... and future? *Memory*, 10, 305-318. doi:10.1080/09658210244000135

- Goh, J. X., Hall, J. A., & Rosenthal, R. (2016). Mini meta-analysis of your own studies: Some arguments on why and a primer on How. *Social and Personality Psychology Compass*, 10, 535-549. doi:10.1111/spc3.12267
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.
- Hepper, E. G., Ritchie, T. D., Sedikides, C., & Wildschut, T. (2012). Odyssey's end: Lay conceptions of nostalgia reflect its original Homeric meaning. *Emotion*, 12, 102-119. doi:10.1037/a0025167
- Hepper, E. G., Wildschut, T., Sedikides, C., Ritchie, T. D., Yung, Y. F., Hansen, N., ... & Gebauer, J. E. (2014). Pancultural nostalgia: prototypical conceptions across cultures. *Emotion*, 14, 733-747. doi:10.1037/a0036790
- Sedikides, C., Cheung, W. Y., Wildschut, T., Hepper, E. G., Baldursson, E., & Pedersen, B. (2017). Nostalgia motivates pursuit of important goals by increasing meaning in life. *European Journal of Social Psychology*. Advance online publication. doi:10.1002/ejsp.2318
- LaBar, K. S., & Cabeza, R. (2006). Cognitive neuroscience of emotional memory. *Nature Reviews Neuroscience*, 7, 54-64. doi:10.1038/nrn1825
- Lasaleta, J. D., Sedikides, C., & Vohs, K. D. (2014). Nostalgia weakens the desire for money. *Journal of Consumer Research*, 41, 713-729. doi:10.1086/677227
- Lyubomirsky, S., & Layous, K. (2013). How do simple positive activities increase well-being?. *Current Directions in Psychological Science*, 22, 57-62. doi:10.1177/0963721412469809
- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology*, 9, 111. doi:10.1037/1089-2680.9.2.111



- Oatley, K., Parrott, W., Smith, C., & Watts, F. (2011). Cognition and Emotion over twenty-five years. *Cognition and Emotion*, 25, 1341-1348.  
doi:10.1080/02699931.2011.622949
- Pessoa, L. (2015). Précis on the cognitive-emotional brain. *Behavioral and Brain Sciences*, 38. doi:10.1017/S0140525X14000120
- Routledge, C., Arndt, J., Wildschut, T., Sedikides, C., Hart, C. M., Juhl, J., ... & Schlotz, W. (2011). The past makes the present meaningful: nostalgia as an existential resource. *Journal of Personality and Social Psychology*, 101, 638. doi:10.1037/a0024292
- Schindler, R. M., & Holbrook, M. B. (2003). Nostalgia for early experience as a determinant of consumer preferences. *Psychology & Marketing*, 20, 275-302.  
doi:10.1002/mar.10074
- Sedikides, C., Green, J. D., Saunders, J., Skowronski, J. J., & Zengel, B. (2016). Mnemic neglect: Selective amnesia of one's faults. *European Review of Social Psychology*, 27, 1-62. doi:10.1080/10463283.2016.1183913
- Sedikides, C., & Wildschut, T. (2016a). Nostalgia: A bittersweet emotion that confers psychological health benefits. In A. M. Wood & J. Johnson (Eds.), *Wiley handbook of positive clinical psychology* (pp. 25-136). Hoboken, NJ: Wiley.
- Sedikides, C., & Wildschut, T. (2016b). Past forward: Nostalgia as a motivational force. *Trends in Cognitive Sciences*, 20, 319-321. doi:10.1016/j.tics.2016.01.008
- Sedikides, C., Wildschut, T., & Baden, D. (2004). Nostalgia: Conceptual issues and existential functions. In J. Greenberg, S. Koole, & T. Pyszczynski (Eds.), *Handbook of experimental existential psychology* (pp. 200-214). New York, NY: Guilford Press.
- Sedikides, C., Wildschut, R. T., Routledge, C., Arndt, J., Hepper, E. G., & Zhou, X. (2015). To nostalgize: mixing memory with affect and desire. *Advances in Experimental Social Psychology*, 51, 189-273. doi:10.1016/bs.aesp.2014.10.001

- Smith, J. L., Harrison, P. R., Kurtz, J. L., & Bryant, F. B. (2014). Nurturing the capacity to savor: Interventions to enhance the enjoyment of positive experiences. In A. C. Parks, S. M. Schueller, A. C. Parks, & S. O. Schueller (Eds.), *The Wiley Blackwell handbook of positive psychological interventions* (pp. 42-65). Wiley-Blackwell.  
doi:10.1002/9781118315927.ch3
- Stephan, E., Sedikides, C., Wildschut, T., Cheung, W. Y., Routledge, C., & Arndt, J. (2015). Nostalgia-evoked inspiration: Mediating mechanisms and motivational implications. *Personality and Social Psychology Bulletin*, 41, 1395-1410.  
doi:10.1177/0146167215596985
- Stephan, E., Wildschut, T., Sedikides, C., Zhou, X., He, W., Routledge, C., Cheung, W. Y., & Vingerhoets, A. J. J. M. (2014). The mnemonic mover: Nostalgia regulates avoidance and approach motivation. *Emotion*, 14, 545-561. doi:10.1037/a0035673
- The New Oxford Dictionary of English*. (1998). (J. Pearsall, Ed.). Oxford, UK: Oxford University Press.
- Van Tilburg, W. A. P., Igou, E. R., & Sedikides, C. (2013). In search of meaningfulness: Nostalgia as an antidote to boredom. *Emotion*, 13, 450-461. doi:10.1037/a0030442
- Van Tilburg, W. A. P., Sedikides, C., & Wildschut, T. (2015). The mnemonic muse: Nostalgia fosters creativity through openness to experience. *Journal of Experimental Social Psychology*, 59, 1-7. doi:10.1016/j.jesp.2015.02.002
- Van Tilburg, W. A., Wildschut, T., & Sedikides, C. (2017). Nostalgia's place among self-relevant emotions. *Cognition and Emotion*, 1-18.  
doi:10.1080/02699931.2017.1351331
- Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: content, triggers, functions. *Journal of Personality and Social Psychology*, 91, 975-993.  
doi:10.1037/0022-3514.91.5.975

- Wildschut, C., Sedikides, C., & Cordaro, F. (2011). Self-regulatory interplay between negative and positive emotions: The case of loneliness and nostalgia. In I. Nyklicek, A. J. J. M. Vingerhoets, & M. Zeelenberg (Eds.), *Emotion regulation and well-being* (pp. 67-83). New York, NY: Springer.
- Zhou, X., Sedikides, C., Wildschut, C., & Gao, D.-G. (2008). Counteracting loneliness: On the restorative function of nostalgia. *Psychological Science, 19*, 1023-1029. doi:10.1111/j.1467-9280.2008.02194.x.
- Zhou, X., Wildschut, T., Sedikides, C., Chen, X., & Vingerhoets, A. J. (2012). Heartwarming memories: Nostalgia maintains physiological comfort. *Emotion, 12*(4), 678. doi: 10.1037/a0027236.

## Footnotes

1. We re-ran the analyses for all studies controlling for gender. The significance of the reported analyses did not change when controlling for gender.
2. The degrees of freedom were 115 (instead of 120), because five participants did not complete one item.
3. The degrees of freedom were 117 (instead of 120), because three participants did not complete one item.
4. In a correlational context such as this, ‘indirect effect’ refers to the significant change in relation between two variables when statistically controlling for a mediating variable (Hayes, 2013).
5. Following Goh, Hall, and Rosenthal’s (2016) guidelines, we used fixed effects in which the mean correlation was weighted by sample size.